

ABSTRACT

[154] An electrically programmable, non-volatile resistive memory includes an array of memory cells, a plurality of bit lines, and a plurality of word lines. Each memory cell comprises a resistive element and a Schottky diode coupled in series and having first and second terminals. Each bit line couples to the first terminal of all memory cells in a respective column of the array. Each word line couples to the second terminal of all memory cells in a respective row of the array. The resistive element for each memory cell may be formed with a film of a perovskite material (e.g., $\text{Pr}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$). The Schottky diode for each memory cell may be formed by a thin film of amorphous silicon. The films for the resistive element and Schottky diode for each memory cell may be stacked in a compact island at the cross point between a bit line and a word line.